THE STILLMAN WRIGHT COLLECTION OF COPEPODA (CRUSTACEA) FROM SOUTH AMERICA IN THE NATIONAL MUSEUM OF NATURAL HISTORY, SMITHSONIAN INSTITUTION

Janet W. Reid

Abstract. — The species of Calanoida and Cyclopoida (Copepoda: Crustacea) from South America that were deposited by Stillman Wright in the collections of the National Museum of Natural History are listed. The collection includes type specimens of 8 species and specimens from type localities of 5 additional species of Diaptomidae from Brazil. These deposits and others in the Kiefer Collection in Germany represent the only known surviving material from Wright's taxonomic studies of South American Calanoida. Previously unpublished records of several species from the collection are listed.

During his career, the American limnologist Stillman Wright described 29 species and subspecies of calanoid copepods of the families Boeckellidae, Diaptomidae, and Pseudodiaptomidae. Most of these species were from inland Brazil and Argentina, and a few were from marine and freshwater collections in Nigeria and the Philippines (Wright 1927-1939, Wright & Tressler 1928). Wright also redescribed 18 species of calanoids from inland and coastal waters of Brazil (Wright 1927, 1928a), and reported on collections from Argentina (Wright 1939). These articles are among the fundamental early works on South American continental Calanoida, and the material that Wright described constitutes a basic resource for continuing taxonomic studies of these zooplankters. The present article lists type and non-type specimens of Copepoda of the Wright Collection held in the National Museum of Natural History, Smithsonian Institution. This collection apparently represents most of the surviving material from Wright's work.

Most of the species described by Wright are still considered valid, a measure of the care and thoroughness of his work. In a review of the known distribution and current nomenclature of South American diaptomids, Brandorff (1976) listed only Diaptomus (now Calodiaptomus) merrillae and D. perelegans Wright, 1927, as possibly belonging to one variable species, a question still unresolved. In addition, both Brandorff (in Brandorff et al. 1982) and Dussart (1984) suggested that the female originally described as that of Diaptomus (now Dactylodiaptomus) pearsei Wright, 1927, is not the same species as the male. These authors furnished descriptions of similar but not identical females ascribed to D. pearsei from the Amazon and Orinoco rivers, respectively. A full listing of works treating Wright's species is beyond the scope of this article; readers are referred to the article by Brandorff (1976) for an indispensable introduction to the literature on South American diaptomids.

Wright drew on two sources of material. His earlier articles treated the calanoids from a collection made by Miss Harriet Merrill from the Amazon Basin and other localities in South America in 1907 and 1908. This collection was acquired by Dr. Chancey Juday and formed the basis for part of Wright's doctoral dissertation (Wright 1928a), which was published as a general revision of South

American Diaptomidae (Wright 1927). Later articles (Wright 1935, 1936a, 1936b, 1938a, 1938b) described material collected by Wright himself in his capacity as staff limnologist of a fisheries project directed by Dr. Rodolfo Von Ihering in the Brazilian northeast. During Wright's stay in Brazil (1933–1937), he also collected in southeastern Brazil and northern Argentina (Reid 1989; Wright 1937a, 1937b, 1939).

The Merrill Collection cannot now be located at the University of Wisconsin (S. Dodson, letter to J. Reid, 1991; J. Lyons, letter to S. Wright, 1985). Some Brazilian copepods were deposited by Wright in the U.S. National Museum (USNM), later the National Museum of Natural History (NMNH) in 1926, before his own sojourn in South America. It can be assumed that these specimens came from the Merrill Collection. This material includes all species in Table 1 and, in Table 2, the specimens originally deposited as D. henseni, a species that Wright himself later redescribed as D. amazonicus (Wright 1935). Additional non-type material of species that were described by Wright in the 1927 article and deposited later may also have been part of the Merrill Collection, although she is not listed as the collector of any of these samples. This supposition is largely an inference from the incomplete and sometimes misspelled locality and date information supplied with the specimens, which is uncharacteristic of Wright's later work, and from the fact that some specimens are listed from localities that were never visited by Wright but were sampled by Merrill. Specimens in this category include, from Table 2: Diaptomus coniferoides, USNM 92947; D. flexipes, USNM 92953; D. pearsei, USNM 92949, 92950; D. perelegans, USNM 92951; D. silvaticus infrequens, USNM 92952; and Pseudodiaptomus gracilis, USNM 60599, 60600, 92945. If this supposition is correct, the slides of D. pearsei, although they were not listed as type material at time of deposit, come from the type locality of the species

Table 1.—Type specimens of South American Diaptomidae (Calanoida) described by Wright and deposited in the collections of the National Museum of Natural History, Smithsonian Institution.

Diaptomus coniferoides Wright, 1927. USNM 59827, Type & ALC, Calama, Brazil, no date. USNM 59828, Paratype Q, ALC, Calama, Brazil, no date. (Noto-diaptomus)

Diaptomus flexipes Wright, 1927. USNM 59818, Type 5, ALC, Santarém, Brazil, no date. USNM 59819, Paratype 9, ALC, Santarém, Brazil, no date. (Rhacodiaptomus)

Diaptomus insolitus Wright, 1927. USNM 59474, Type ô, ALC, Calama, Amazonas, Brazil, no date. USNM 59475, Paratype ♀, ALC, Calama, Amazonas, Brazil, no date. (Rhacodiaptomus)

Diaptomus merrillae Wright, 1927. USNM 59510, Type 6, ALC, Calama, Amazonas, Brazil, no date. USNM 59511, Paratype 9, ALC, Calama, Amazonas, Brazil, no date. (Calodiaptomus)

Diaptomus perelegans Wright, 1927. USNM 59512, Type & ALC, Calama, Amazonas, Brazil, no date. USNM 59513, Paratype & ALC, Calama, Amazonas, Brazil, 17 May 1926. (Calodiaptomus)

Diaptomus santaremensis Wright, 1927. USNM 59514, Type 9, ALC, Santarém, Grao Para, Brazil, no date. (Diaptomus s. 1.)

Diaptomus silvaticus Wright, 1927. USNM 59822, Type & SLI, Para, Brazil, no date. USNM 59823, Paratype 9, ALC, Para, Brazil, no date. (Diaptomus s.l.)

Diaptomus silvaticus infrequens Wright, 1927. USNM 59824, Type & SLI, Para, Brazil, no date. (Diaptomus s. l.)

and were probably used by Wright in his original description. Designated type material of *D. pearsei* is no longer in existence (Table 3).

Regarding material collected during his own stay in Brazil, Wright once (1935:214) indicated that specimens were to be deposited at the Museu Nacional, Rio de Janeiro, Brazil, at the Museum of Zoology of the University of Michigan, and at the U.S. National Museum. However, the Museu Nacional presently holds no material deposited by Wright (M. M. G. Corrêa, letter to J. Reid, 1989), and all collections of Crustacea held by the Museum of Zoology were transferred to the NMNH in the 1930's (M. O'Brien, pers. comm. to J. Reid, 1989).

Table 2.—Non-type specimens of South American Calanoida and Cyclopoida from the Wright Collection in the National Museum of Natural History, Smithsonian Institution.

Calanoida: Boeckellidae

Boeckella bergi Richard, 1897. USNM 79546, 50+, ALC, Laguna in Plátano, between Buenos Aires and La Plata, Argentina, 5 Jan 1937 (includes Acanthocyclops vernalis). USNM 92965, 28, ALC, roadside pool, Guamini, Prov. Buenos Aires, Argentina, 10 Jan 1937. USNM 92968, 1000+, L. en Platano, near Quilmes, Argentina, 6 Jan 1937 (includes A. vernalis); det. J. W. Reid.

Boeckella dentifera Brehm, 1935. USNM 79545, 50+, ALC, Laguna Salada at La Dulce, Prov. Buenos Aires, Argentina, 18 Jan 1937.

Boeckella gracilis Daday, 1901. USNM 79547, 50+, ALC, Laguna Sarco, near Lavaisse, Prov. San Luis, Argentina, 10 Dec 1936. USNM 92956, 100+, ALC, L. Encadenada, Esta, San Luis, Argentina, 9 Dec 1936 (includes B. poopoensis). USNM 92957, 200+, ALC, Lago Chascomus, Argentina, 9 Nov 1936. USNM 92958, 200+, ALC, L. Sarco, San Luis, Argentina, 10 Dec 1936. USNM 92959, 200+, ALC, L. Alvardon Deffarrari, Argentina, 18 Jan 1937. USNM 92966, 1000+, ALC, Tres Lagunas, Argentina, No. 2, 5 Dec 1936 (includes Mesocyclops annulatus and Metacyclops mendocinus); det. J. W. Reid. USNM 92967, 1000+, ALC, Tres Lagunas, Argentina, No. 2, 5 Dec 1936 (includes M. annulatus and M. mendocinus); det. J. W. Reid. USNM 92969, 10+, ALC, L. Nassau, San Luis, Argentina, 7 Dec 1936 (includes Diaptomus incompositus and M. mendocinus); det. J. W. Reid.

Boeckella poopoensis Marsh, 1906. USNM 79548, 50+, ALC, Laguna Alsina, near Bonafacio, Prov. Buenos Aires, Argentina, 10 Jan 1937.

Calanoida: Diaptomidae

Diaptomus amazonicus Wright, 1935. USNM 59515, 1 &, ALC, Lake Arary, Marojo (sic), Brazil, no date. USNM 59817, 1 &, ALC, Lake Arary, Marojo (sic), Brazil, no date. USNM 79541, 2 &, ALC, Marajó Island, Pará, Brazil, "from type locality," no date. (USNM 59515 and 59817 were originally deposited as D. henseni Dahl, 1894; these determinations were later changed and the species described as D. amazonicus by Wright, 1935.) (Notodiaptomus)

Diaptomus anisitsi Daday, 1905. USNM 92971, 50+, ALC, L. Cricket Club, Buenos Aires, Argentina, 1 Jan 1936. (Notodiaptomus)

Diaptomus azevedoi Wright, 1935. USNM 79544, 7, ALC, açude (artificial lake) near São João do Rio do Peixe, Parahyba, Brazil, "from type locality," no date. (Argyrodiaptomus)

Table 2.—Continued.

Diaptomus bergi Richard, 1897. USNM 92954, 1 &, SLI, Guamini, Buenos Aires, Argentina, no date. USNM 92955, 1 &, SLI, Guamini, Buenos Aires, Argentina, no date. USNM 92964, 300+, ALC, Glew, Prov. Buenos Aires, Argentina, 26 Dec 1936. (Argyrodiaptomus)

Diaptomus coniferoides Wright, 1927. USNM 92947, 1 & SLI, Brazil, no date. USNM 92962, 200+, ALC, Arroyo Pajarito, Tigré, Argentina, 30 Nov 1936 (includes Pseudodiaptomus richardi Dahl). USNM 92963, 20+, ALC, Rio Terito, near Tigré, Argentina, 26 Nov 1936 (includes Pseudodiaptomus richardi Dahl). (Notodiaptomus)

Diaptomus flexipes Wright, 1927. USNM 92953, 1 &, SLI, Santarém, Brazil, no date. (Rhacodiaptomus)

Diaptomus iheringi Wright, 1935. USNM 79542, 7+, ALC, Açude Puxinanã, near Campina Grande, Parahyba, Brazil, "type locality," no date. (Notodiaptomus)

Diaptomus incompositus Brian, 1926. USNM 92960, 100+, ALC, lago artificial, Balneario, Quilmes, Argentina, 1 Jan 1937. USNM 92961, 300+, ALC, Lago Chascomus, Argentina, 10 Nov 1936. USNM 92970, 1000+, ALC, Tres Lagunas, San Luis, Argentina, 5 Dec 1936 (includes Eucyclops neumani and M. mendocinus); det. J. W. Reid. USNM 250913, 69, 48, ALC, L. Nassau, San Luis, Argentina, 7 Dec 1936 (out of USNM 92969); det. J. W. Reid. (Notodiaptomus)

Diaptomus nordestinus Wright, 1935. USNM 79543,
5+, ALC, Açude Simão, near Campina Grande, Parahyba, Brazil, "from type locality," no date. (Notodiaptomus)

Diaptomus pearsei Wright, 1927. USNM 92949, 1 & SLI, Calama, Brazil, no date. USNM 92950, 1 \, SLI, Calama, Brazil, no date. (Dactylodiaptomus)

Diaptomus perelegans Wright, 1927. USNM 92951, 1 5, SLI, Brazil (word "Para" on label crossed out), no date. (Calodiaptomus)

Diaptomus silvaticus infrequens Wright, 1927. USNM 92952, 1 &, SLI, Para, Brazil, no date. (Diaptomus s. l.)

Diaptomus transitans Kiefer, 1929. USNM 92972, 100+, ALC, Emb. S. Roque, Rio Primero, Argentina, 21 Dec 1936. (Notodiaptomus)

Calanoida: Pseudodiaptomidae

Pseudodiaptomus gracilis (Dahl, 1894). USNM 60599, 1 & ALC, South America, no date. USNM 60600, 1 \, ALC, South America, no date. USNM 92945, 1 \, SLI, South America, no date.

Pseudodiaptomus richardi (Dahl, 1894). USNM 92963, 4 \, 5 \, 5, ALC, Rio Terito near Tigr\(\epsilon\), Argentina, 26 Nov 1936. USNM 233581, 9 \, 21 \, ALC, lago

Table 2.—Continued.

artificial, Balneario, Quilmes, Argentina, 1 Jan 1937 (out of USNM 92960); det. T. C. Walter.

Cyclopoida: Cyclopidae

Acanthocyclops vernalis (Fischer, 1853). USNM 250911, 3 9, 3 8, ALC, L. en Platano, near Quilmes, Argentina, 6 Jan 1937 (out of USNM 92968); det. J. W. Reid. USNM 250916, 50+, ALC, Laguna in Plátano near Buenos Aires, Argentina, 5 Jan 1937 (out of USNM 79546); det. J. W. Reid.

Eucyclops neumani (Pesta, 1927). USNM 250908, 3 9, 5 ô, 2 copepodids, ALC, Tres Lagunas, San Luis, Argentina, 5 Dec 1936 (out of USNM 92970); det. J. W. Reid.

Mesocyclops annulatus (Wierzejski, 1892). USNM 250915, 38, roadside pool, Guamini, Prov. Buenos Aires, Argentina, 10 Jan 1937 (out of USNM 92965); det. J. W. Reid. USNM 250919, 100+, ALC, Tres Lagunas, Argentina, No. 2, 5 Dec 1986 (out of USNM 92966); det. J. W. Reid.

Metacyclops mendocinus (Wierzejski, 1892). USNM 250910, 2 \, ALC, Tres Lagunas, Argentina, No. 2, 5 Dec 1936 (out of USNM 92966); det. J. W. Reid. USNM 250912, 4 \, 3 \, 3 \, ALC, L. Nassau, San Luis, Argentina, 7 Dec 1936 (out of USNM 92969); det. J. W. Reid. USNM 250907, 2 \, 4 \, 4 \, ALC, Tres Lagunas, San Luis, Argentina, 5 Dec 1936 (out of USNM 92970); det. J. W. Reid.

Wright himself (pers. comm. to J. Reid, 1985) did not recall having made deposits in any museum except the NMNH. Wright did send a few samples from Brazil to Dr. Friedrich Kiefer. These specimens are now held in the Kiefer Collection at the Staatliches Museum für Naturkunde Karlsruhe in Germany (Franke 1989:138, 293). All material, including unsorted plankton samples, that was in Wright's possession upon his return to the United States was eventually deposited in the collections of the Division of Crustacea, Department of Invertebrate Zoology, NMNH. The holdings at NMNH and in the Kiefer Collection therefore appear to represent the only South American material described or collected by Wright that is still in existence. Specimens deposited by Wright from other parts of the world are also held by the NMNH. Wright's field notes from the Brazil years are deposited in the archives of the C. B. Wilson Copepod Library, NMNH.

Table 1 lists those of Wright's type specimens of South American Diaptomidae that are held by the NMNH, together with catalog number, type status, method of preservation, and locality data. Table 2 lists additional, non-type South American material of Calanoida and Cyclopoida that was donated by Wright to the NMNH collections. All species were determined by Wright himself unless otherwise indicated. Some of the Brazilian specimens listed in Table 2 are labeled "from type locality" according to information given by Wright at the time of deposit. Most other specimens of Diaptomidae are from localities that were mentioned by Wright in one or more articles, although some of these localities and all the localities of Boeckella spp. represent previously unpublished records. Some of the material is from unsorted plankton samples that were labeled according to the dominant genus at the time of deposit, and were recently examined by myself. These determinations are indicated in Table 2 and also represent new records. Records of Pseudodiaptomus spp. were published in detail by Walter (1989). The method of preservation is indicated by ALC (alcohol) or SLI (slide). Locality names follow the spelling on the labels; modern Portuguese spelling is quite different in some cases. Genera of the Family Diaptomidae have undergone several revisions; species are listed under the original genus name, Diaptomus, with the presently accepted genus name appended in parentheses.

Table 3 lists species described by Wright for which original type material is apparently no longer in existence. The type locality or, if no type locality was specified in the original article, all the localities mentioned are given. The present genus name is given in parentheses.

Table 3.—Species of South American Diaptomidae and Pseudodiaptomidae described by Wright for which type material apparently no longer exists.

- Diaptomus amazonicus Wright, 1935. No type locality specified. Localities mentioned in original description: Rio Tapajoz near Santarém, Lago Arary, Island of Marajó, Rio Arama, all in Pará, Brazil; Essequibo River and at Georgetown, British Guiana. (Notodiaptomus)
- Diaptomus argentinus Wright, 1938b. Type locality: pool 3 km south of Glew, on the road to San Vicente, Buenos Aires Province, Argentina. (Argyrodiaptomus)
- Diaptomus azevedoi Wright, 1935. Type locality: small açude on sitio Olho d'Agua, near Açude Pilões, Parahyba, Brazil. (Argyrodiaptomus)
- Diaptomus calamensis Wright, 1927. No type locality specified. Localities mentioned in original description: Calama, Amazonas, and Santarem, Grao Para, Brazil. (Rhacodiaptomus)
- Diaptomus cearensis Wright, 1936b. No type locality specified. Localities mentioned in original description: northeastern Ceará, Açude Pilões, near São João do Rio do Peixe, Parahyba; several waters near Caraúbas and Assú, Rio Grande do Norte, Brazil. (Notodiaptomus)
- Diaptomus corderoi Wright, 1936b. Type locality: Lagoa Santa near Bello Horizonte, Minas Geraes, Brazil. Topotype material has been deposited at NMNH and at the Museu de Zoologia da Universidade de São Paulo (Reid 1987). (Scolodiaptomus)
- Diaptomus dahli Wright, 1936b. Type locality: Rio Arary, Marajó Island, Pará, Brazil. (Notodiaptomus) Diaptomus iheringi Wright, 1935. Type locality: Açude Puxinanã, village of Puxinanã, near Campina Grande, Parahyba, Brazil. (Notodiaptomus)
- Diaptomus isabelae Wright, 1936b. No type locality specified. Localities mentioned in original description: two pools near Jatobá, Pernambuco, Brazil. (Notodiaptomus)
- Diaptomus jatobensis Wright, 1936b. Type locality: pool at Itaparica Falls, Bahia side of Rio São Francisco, near Jatobá, Pernambuco, Brazil. (Notodiaptomus)
- Diaptomus neglectus Wright, 1938b. Type locality: pool at Jaguára, near Bello Horizonte, Minas Geraes, Brazil. (Argyrodiaptomus)
- Diaptomus nordestinus Wright, 1935. No type locality specified. Localities mentioned in original description: Açude Simão and pool, both near Campina Grande, and Açudes Linda Flor and Lapa, Parahyba, Brazil. (Notodiaptomus)
- Diaptomus paulistanus Wright, 1936b. No type locality specified. Localities mentioned in original description: five waters near São Paulo, and one in Juiz de Fóra, Minas Geraes, Brazil. (Odontodiaptomus)

Table 3.—Continued.

Diaptomus pearsei Wright, 1927. Type locality: South Pond, Calama, Amazonas, Brazil. (Dactylodiaptomus)

Pseudodiaptomus marshi Wright, 1936a. Type locality: Rio Capibaribe, Recife, Brazil.

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Department of Invertebrate Zoology, NHB-163, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560, U.S.A.